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[54] **METHOD AND APPARATUS FOR
ENDPOINTING MECHANICAL AND
CHEMICAL-MECHANICAL POLISHING OF
SUBSTRATES**

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[58] **Field of Search** 451/7, 41, 53,
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604; 216/88, 89

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[57] ABSTRACT

An apparatus and method for stopping mechanical and chemical-mechanical polishing of a substrate at a desired endpoint. In one embodiment, a polishing machine has a platen, a polishing pad positioned on the platen, and a polishing medium located at a planarizing surface of the polishing pad. The polishing machine also has a substrate carrier that may be positioned over the planarizing surface of the polishing pad, and at least one heat sensor is coupled to the polishing machine to detect heat at a front side of the substrate. The heat sensor preferably measures a temperature of a component sensitive to heat at the front side of the substrate, such as the planarizing surface of the polishing pad, the back side of the substrate, or the byproducts produced by polishing the substrate. In operation, the heat sensor monitors the heat at the front side of the substrate, and the removal of material from the substrate is stopped when the heat at the front side of the substrate changes from a first heat range to a second heat range.

13 Claims, 4 Drawing Sheets

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